

Applicant : Laurence E. Allen III
Serial No. : 10/775,613
Filed : February 9, 2004
Page : 9 of 12

Attorney's Docket No.: 10887-009002

REMARKS

In reply to the Office Action of September 21, 2005, Applicant submits the following remarks. Claims 1, 3, 5-6, 8, 13-14 and 29-30 have been amended. Claims 4, 19-26 and 28 have been cancelled. Applicant reserves the right to prosecute the subject matter of canceled claims in one or more continuing applications. Claims 34-35 are new. No new matter has been added. Claims 1-3, 5-11, 13-18 and 29-35 are now pending after entry of this amendment. Applicant respectfully requests reconsideration in view of the foregoing amendments and these remarks.

Section 102 Rejections

Claims 1 and 7-10 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Publication No. 2004/0004033 ("Vandeputte"). Applicant respectfully disagrees.

Amended claim 1 is directed to a method for separating a mixture. One or more classification separations are performed on a slurry including a separation liquid and one or more particulate media materials, wherein the one or more separations separate from the slurry a coarse fraction containing coarse particles of the one or more media materials, the coarse particles having a particle size greater than a first particle size threshold. One or more classification separations are performed on the slurry to separate from the slurry a fine fraction containing fine particles of the one or more media materials, the fine particles having a particle size less than a second particle size threshold. The separations produce a classified media having a controlled particle size distribution of the particulate media materials. The classified media is combined with a mixture to be separated to generate a separation mixture.

Vandeputte describes a density separation operation V that uses a liquid medium having water, wetting agents and inorganic compounds, such as clay (FIG. 5, paragraph 91). The clay is suspended in water and the heaviest particles, which accumulate at the bottom of the container, are removed.

Vandeputte fails to suggest or disclose performing one or more classification separations on a slurry to separate from the slurry a fine fraction containing fine particles of the one or more media materials. Rather, Vandeputte describes removing only the heaviest particles from the

Applicant : Laurence E. Allen III
Serial No. : 10/775,613
Filed : February 9, 2004
Page : 10 of 12

Attorney's Docket No.: 10887-009002

liquid medium. Vandeputte does not suggest that a fine fraction is separated from the slurry, but that the fines are left in the liquid medium. For at least this reason, the applicant submits that claim 1 as amended is not anticipated by Vandeputte. Claims 7-10 depend from claim 1 and are similarly not anticipated.

Section 103 Rejections

Claims 1, 2, 5-11, 13-18 and 30-33 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Vandeputte in view of U.S. Patent No. 5,819,945 ("Laskowski"). The applicant respectfully disagrees.

Laskowski describes other patents, U.S. Patent No. 5,348,160, ("Kindig '160") and U.S. Patent No. 5,262,962 ("Kindig '962") to Kindig (col. 2 – col. 3). According to Laskowski, Kindig '160 describes beneficiation of fine particle coal (col. 2, lines 57- col. 3, line 9). Raw coal is sized to remove fine coal particles. The fine fraction is separated into multiple fractions of different size specifications in dense medium cyclones. The dense medium contains ultra-fine magnetite particles of a narrow size distribution. According to Laskowski, Kindig '962 selects magnetite having a particle diameter less than about 0.005 mm to form a dense media for beneficiation (col. 3, lines 30-43).

Laskowski describes finding an optimum medium composition for dense medium cyclones using bimodal magnetite suspensions (col. 5, lines 39-41). Conventional magnetite samples were used to prepare the dense media, where dense media included magnetite samples having a $d_{63.2} = 2.7$ and magnetite samples having a $d_{63.2} = 33.0$ (col. 5, lines 54-57, table 1). The bimodal magnetite suspensions were used to separate density tracers (col. 6, lines 20-32). The coarse-to-fine particle size ratio in the bimodal magnetite suspensions is in the range from about 5 to about 10 (col. 4, lines 33-40).

Both Vandeputte and Laskowski fail to suggest or disclose performing one or more classification separations that include separating from a slurry a coarse fraction containing coarse particles of the one or more media materials, the coarse particles having a particle size greater than a first particle size threshold, and performing one or more classification separations to

Applicant : Laurence E. Allen III
Serial No. : 10/775,613
Filed : February 9, 2004
Page : 11 of 12

Attorney's Docket No.: 10887-009002

separate from the slurry a fine fraction containing fine particles of the one or more media materials, the fine particles having a particle size less than a second particle size threshold. Rather, Laskowski describes forming a bimodal dense medium from magnetite samples having both fine and coarse fractions, where the coarse-to-fine particle size ratio is in the range from about 5 to about 10. Laskowski uses the bimodal dense medium to separate density tracers. Laskowski does not separate the bimodal dense medium to separate out a coarse fraction and a fine fraction. In fact, this would be counter to the function Laskowski's invention, affecting the viscosity or stability of Laskowski's dense medium (col. 7, lines 1-15).

Laskowski also describes patents to Kindig that use dense medium containing ultra-fine magnetite particles of a narrow size distribution. The dense medium facilitates separation of coal particles into different size ranges. Laskowski does not suggest that Kindig obtains the dense medium by performing one or more classification separations on a slurry. Moreover, Laskowski does not suggest separating from the slurry a coarse fraction containing coarse particles of the one or more media materials, the coarse particles having a particle size greater than a first particle size threshold, or performing one or more classification separations to separate from the slurry a fine fraction containing fine particles of the one or more media materials, the fine particles having a particle size less than a second particle size threshold. For at least these reasons, the applicant submits that no *prima facie* case of obviousness has been made with respect to claim 1 or claims 2, 5-11, 13-18 or 32-33 which depend from claim 1.

Claim 30 is directed to a method of making a classified media. The method includes performing a classification separation on a slurry in a density separator, wherein the slurry includes a separation liquid and one or more particulate media materials and the particulate media materials include particles having a size between 5 and 30 microns. The step of performing a classification separation is repeated until the classified media is substantially free of particles 5 microns and under.

Vendeputte does not describe the size of the inorganic compounds that are in the liquid medium. Laskowski summarizes methods described by Kindig, which use magnetite having a particle diameter less than about 0.005 mm. Laskowski describes a bimodal dense medium,

Applicant : Laurence E. Allen III
Serial No. : 10/775,613
Filed : February 9, 2004
Page : 12 of 12

Attorney's Docket No.: 10887-009002

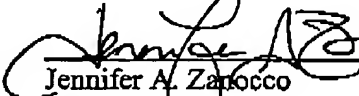
which has both fine and coarse fractions, the fine fraction having a size in the range of about 1 to about 10 microns (col. 4, lines 60-63). Laskowski points out the desirability of having both fine and coarse fractions in the medium (col. 4, lines 27-32). Laskowski also notes that a very coarse dense medium can be used, ($d_{63.2} = 33.0$) (col. 7, lines 8-11), but does not obtain the medium by performing a classification separation on a slurry or repeating the classification separation until the classified media is substantially free of particles 5 microns and under. For at least these reasons, the applicant submits that no *prima facie* case of obviousness has been made with respect to claim 30 or claim 31, which depends from claim 30.

Allowable Subject Matter

Applicant thanks the Examiner for finding claims 3 and 29 to be merely objected to. Claims 3 and 29 have been rewritten in independent form including all the limitations of the base claim and any intervening claims. Applicant submits claims 3 and 29 are in condition for allowance.

Please apply excess claims fees in the amount of \$100 and any other required charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: December 15, 2005 
Jennifer A. Zappocco
Reg. No. 54,563

Customer No. 26181
Fish & Richardson P.C.
Telephone: (650) 839-5070
Facsimile: (650) 839-5071
50304493.doc